PATENT ABSTRACTS OF JAPAN

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(71)Applicant : SHIMODA TSUNEHISA
(72)Inventor : SHIMODA TSUNEHISA

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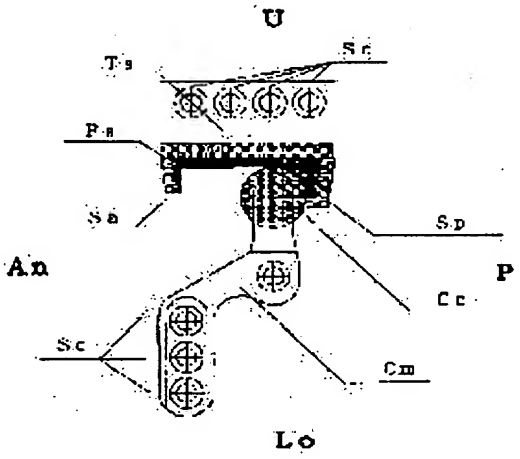
(54) ARTIFICIAL JAW JOINT

(57)Abstract:
PROBLEM TO BE SOLVED: To hold the form of the lower face while preventing the displacement of the mandible at the time of a static nonfunction and to compensate gliding motion by rotation motion at the time of a dynamic function by roughly bisecting an artificial jaw joint to the bone head and socket and segmenting both to function parts and bone joint parts to constitute an artificial jaw joint.
SOLUTION: The artificial joint is roughly bisected to the socket and the bone head. The socket is segmented to a soft material socket part Fs and a socket-side bone head joint part Ts and the bone head to a bone head- mandible joint part Cm and a hard bone head part Cc, respectively. The socket and the bone head respectively have lock screws Ss for bone joining. Since the artificial joint exists forward and downward of the position of the intrinsic jaw joint, the bone contact area sufficient for fixing and the quality of the osteobeam are easily obtd. at the boundaries among the socket-side bone head joint part Ts and the bone head-mandible joint part Cm which are the joint surfaces with the bone and the existing bone. There is a distance to the dangerous braincase and there is no need for worrying about the sinking to the base of the skull.



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CLAIMS

[Claim(s)]
[Claim 1] Artificial temporomandibular joint which the temporomandibular joint was not set as the anatomical position of the body, but agreed in the location at the time of starting anterior luxation of the temporomandibular joint, and was positioned in the joint upheaval (tuberculum articulare) lowest point of a convex temporal bone in the front lower part to the location of the original temporomandibular joint (A).
[Claim 2] Artificial temporomandibular joint according to claim 1 to which the amount of openings in the anterior-tooth section decreases even if the amount of gliding motility of the joint head is not proportional to increase of the amount of openings in the anterior-tooth section but the amount of sliding motion ahead of the joint head increases at the time of dynamic and a function (A).
[Claim 3] It is the artificial temporomandibular joint according to claim 1 with which this invention is a sagittal section view although it rolls with slipping, the original temporomandibular joint showing the configuration which consists of a concave glenoid cavity and the convex joint head, and paying a load in a concave convex and movement is compensated, and the configurations of the socket and the head indicate the contact relation of a point pair point to be unlike the anatomical gestalt of the body (A).
[Claim 4] This invention is artificial temporomandibular joint according to claim 1 the configurations of the socket and the head indicate the contact relation of a line pair line to be by the forehead cross-section view unlike the anatomical gestalt of the body (A).
[Claim 5] Artificial temporomandibular joint according to claim 1 to which the elasticity material socket section (Fs) which is a function part of a socket (socket) which hits a glenoid cavity can slide on an inside-and-outside side direction although fixed in order (A).
[Claim 6] Artificial temporomandibular joint according to claim 1 over which it can glide order-wise and in inside-and-outside side while the hard material condyle section (Cc) which is a function part of the condyle equivalent to the joint head rotates in accordance with the gestalt of the elasticity material socket section (Fs) at the time of movement and permits dehiscence within a glenoid cavity (A).

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the artificial temporomandibular joint (A) for performing replacement arthroplasty for the therapy to the various lesions of a head-of-mandible deficit, hypoplasia, articular rheumatism, a trauma, a neoplasm, or others.
[0002]
[Description of the Prior Art] The clinical application with the satisfactory artificial temporomandibular joint which performs joint total replacement arthroplasty of the temporomandibular joint is not made. Even if the many are restricted to the-like use between ** of the hard material condyles, such as a metal and ceramics, in this country and the reconstruction by the population ingredient of the temporomandibular joint includes in and outside the country, there are few reports of the eternal and semipermanent artificial temporomandibular joint, and the treatment results of reports are also bad, and they are not recognized clinically.
[0003] The artificial temporomandibular joint which performs eternal and semipermanent total replacement arthroplasty has some which are depended on the hard material condyles, such as a metal and ceramics, a hard material socket and the hard material condyle, and elasticity material sockets, such as high density polyethylene and ultra high molecular weight polyethylene, like an artificial knee joint or an artificial hip joint. However, since all were made to bear a close resemblance [gestalt / an original anatomical position and an original gestalt], functional recovery of the temporomandibular joint with many sliding-motion elements was not completed, but compensated sliding motion with superfluous rotation, and was reproducing a part of jaw movement function.
[0004] Since there are many sliding-motion elements, when the temporomandibular joint to permute is made in agreement with an original anatomical position and an original gestalt in the specific gravity of slipping and rotation, the amount of sliding motion of temporomandibular joint will increase like the momentum of the original temporomandibular joint. If a point with least momentum is assumed to be the motor center of the artificial temporomandibular joint in movement of the whole temporomandibular joint, the temporomandibular joint rebuilt will be positioned in the part distant distantly from a motor center as a result, and it cannot reproduce a complicated articular movement while the numerousness of the amounts of sliding motion ****.
[0005] Even if it makes a normal temporomandibular-joint gestalt recover the artificial temporomandibular joint, originally the concave three dimensions glenoid cavity which is a socket is not a load burden side. Therefore, it is only the part of a glenoid cavity, and moreover a jaw movement tends to be compensated only with rotation and strong derangement will **** it. Consequently, a superfluous load causes the stress concentration of a part and slack and breakdown of an artificial ingredient tend to take place. For this reason, we have been anxious about application of the eternal temporomandibular-joint permutation system itself all over the world.
[0006]
[Problem(s) to be Solved by the Invention] This invention leaves the anatomical standpoint of the Homo sapiens temporomandibular joint, and stands on a living body dynamic standpoint, and statically, it has a stopper's duty as a supporter which maintains a gestalt, and the artificial temporomandibular joint makes shift of rotation and gliding motility smooth while doubling and giving the duty of a pin center,large as a

rotation core dynamically.
[0007] Specifically, the contact surface of a glenoid cavity and the joint head is designed so that line contact may be carried out in point contact and a forehead cross-section view by the sagittal section view. Moreover, the joint head prevents superfluous movement to the front and back with a stopper, and gives the structure which slides so that the lateroduction free in an inside-and-outside side direction may be permitted. For this reason, in the time of static and un-functioning, the location of the mandible to the inside face is maintained and the bottom face is supported from the stress of the perimeter muscles which act on the artificial temporomandibular joint. Moreover, although the specific gravity of the sliding motion which can be hard to reproduce is decreased, a jaw movement function is made to improve by adding the consideration in which the amount of sliding motion is not in direct proportion to the amount of openings, although the subject of temporomandibular-joint movement is considered as rotation at the time of dynamic and a function. Moreover, the lateroduction with the free joint head is permitted. This invention makes it a technical problem to realize the artificial temporomandibular joint with such capacity.
[0008]
[Means for Solving the Problem] In order to attain the above-mentioned technical problem, this invention was considered as the following configurations. That is, the artificial temporomandibular joint A concerning this invention is roughly bisected by Condyle C and Socket S. Furthermore, these both can classify into a function part and the osteosynthesis section, respectively. Consequently, the component of the artificial temporomandibular joint A is divided into four.
[0009] Condyle C is first divided into the (1) condyle-mandible joint Cm which carries out the osteosynthesis to the existing mandible M, applying to the mandibular-ramus radial border RL from a mandibular notch RN, and (2) hard material condyle section Cc of the Rugby football form which is a function part. Moreover, Socket S is divided into (3) elasticity material socket section Fs of the function part in contact with the hard material condyle section Cc, and the (4) socket-temporal bone joint Ts which carries out the osteosynthesis of the socket S to the existing bone of the joint upheaval (tuberculum articulare) AE of a temporal bone, respectively.
[0010] The elasticity material socket section Fs which makes the main important point of this invention contacts punctiform in a sagittal section view to the hard material condyle section Cc of the Rugby football form in the functional side on a straight line, and contacts in the shape of a curve by the forehead cross-section view, and contacts in the shape of a curve also in a horizontal section at the time of static centric occlusion by the method view of the outside of a sagittal plane. Furthermore, the front stopper Sa which prevents the superfluous migration to the front and back, and the back stopper Sp also have. For this reason, in centric occlusion, the hard material condyle section Cc of the artificial temporomandibular joint A positioned at least in the back limitation of a mandible contacts the elasticity material socket section Fs, and is stabilized, and it functions as a supporting section which maintains bottom face-form voice.
[0011] Since there is a movement terminal of a tooth and a row of teeth in static centric occlusion, it is thought by current that the temporomandibular-joint section has not paid the strong load. therefore, the artificial temporomandibular joint A in a static condition has the dynamic reinforcement which can be provided as reaction force to the stress of the perimeter muscles only for maintaining bottom face-form voice -- being sufficient . The artificial temporomandibular joint A is advantageous in [expose / section joints besides the body, such as a knee joint and a hip joint, / to a load called weight / at this point / always] structure study. Moreover, it is thought that the bone trabeculae of the joint upheaval (tuberculum articulare) AE of the temporal bone in which Socket S is installed are thick as compared with the bone trabeculae of a glenoid cavity part, and can bear more loads.
[0012] Dynamic, i.e., the specific gravity of rotation [gliding motility] although exercised in the time of a function by the hard material condyle section Cc of the artificial temporomandibular joint A rolling with slipping in connection with a jaw movement, since the condyle C of the artificial temporomandibular joint A of this invention approaches with a point with least momentum in movement of the whole temporomandibular joint, becomes large. Although the artificial temporomandibular joint A, and the tooth and row of teeth which are a movement terminal may become near and its amount of rotation may increase, there is little gap with a motor center conversely, and it is easy to compensate a skid with rotation.
[0013] The contact surface with the hard material condyle section Cc of the plane elasticity material socket section Fs has the fixed include angle F to the fasset of a maxillary-tooth train and a maxilla so

that the amount of sliding motion may not be in direct proportion to the amount of openings. And the hard material condyle section Cc of the Rugby football form carries out point contact to a straight-line-like socket in a sagittal section at the time of the functional movement which separates from the back stopper Sp. Open size of the opening distance of the anterior-tooth section is not carried out gliding to the method of Shitamae against the stress of the perimeter muscle which adheres to a mandible like the conventional artificial temporomandibular joint B, in order to slide on the elasticity material socket section Fs top which has the fixed include angle F to a maxillary-tooth train, when the hard material condyle section Cc glides after rotation of a constant rate. This originates in it being shown that the amount of openings in the anterior-tooth section does not increase fundamentally, rolling, and the shift to sliding motion from movement being smooth and the structure where sufficient sliding motion can be performed even if it rolls and movement reaches a critical mass being given only by gliding motility in the artificial temporomandibular joint A of this invention.

[0014] In order that the hard material condyle section Cc may be designed so that the elasticity material socket section Fs to deviation may also be possible, and it may compensate the lateroduction of the hard material condyle section Cc to the sudden front and the sudden lateroduction which are represented by pair side digestion, the elasticity material socket section Fs can slide on an inside-and-outside side to the socket-temporal bone joint Ts. Furthermore, in the case of digestion, there is no gap of the static location of the occluding relation of the tooth of a vertical jaw to a movement terminal and the artificial temporomandibular joint a permutation side (operation side). From three points, the artificial temporomandibular joint A of this invention cannot require [above-mentioned] an excessive load easily about the difficult chewing motion of reappearance as compared with the conventional artificial temporomandibular joint B. Furthermore, the artificial temporomandibular joint A of this invention has the large include angle at which the gestalt shows the opposite relation between the facies articularis of ****** to by ****** and the forehead cross-section view, and pays ****** from the Homo sapiens temporomandibular joint by the sagittal section view like a rabbit, a dog, and a monkey, and cannot receive constraint in the direction of ****** easily.

[0015]

[Example] Hereafter, the example of this invention expressed by the drawing is explained concretely. As an example, it is positioned in the joint upheaval (tuberculum articulare) AF lowest point of a convex temporal bone, and the contact surface gestalt of Socket S explains the artificial temporomandibular joint A of this invention by which the shape of a curved surface and the gestalt of Condyle C were constituted from a Rugby football form so that the functional side of a cross section might become line contact by point contact and the forehead cross-section view by the sagittal section view.

[0016] The sagittal plane assembly drawing of the artificial temporomandibular joint A of this invention is shown in drawing 1 . The artificial temporomandibular joint A is roughly divided into Socket S and Condyle C, Socket S is divided into the elasticity material socket section Fs and the socket-temporal bone joint Ts, and Condyle C is divided into the condyle-mandible joint Cm and the hard material condyle section Cc, respectively. Socket S and Condyle C have the screw Sc for immobilization for osteosynthesis, respectively. In drawing 2 , drawing 3 shows the assembly drawing from the horizontal plane upper part of the artificial temporomandibular joint A, and drawing 4 shows the assembly drawing from the horizontal plane lower part of the artificial temporomandibular joint A for the coronal-plane assembly drawing of the artificial temporomandibular joint A again.

[0017] drawing 1 thru/or drawing 4 -- setting -- the component (the condyle-mandible joint Cm, the hard material condyle section Cc, the elasticity material socket section Fs, socket-temporal bone joint Ts) of four artificial temporomandibular joint A -- the physical relationship of the back stopper Sp, the front stopper Sa, the temporal bone guide Tg, and the temporal bone stopper Ls -- moreover, the physical relationship of the screw Sc for immobilization for osteosynthesis is also shown.

[0018] Drawing 5 expresses the mimetic diagram of the sagittal plane which equipped the body with the equipment used as conventional artificial temporomandibular joint B, and shows the mimetic diagram of a horizontal plane as well as [with drawing 6 , it is the same and] the mimetic diagram of the coronal plane, and drawing 7 . Furthermore, the sagittal plane mimetic diagram at the time of opening of the equipment used for drawing 8 as conventional artificial temporomandibular joint B is shown. As drawing 5 thru/or drawing 8 show, the artificial temporomandibular joint is put on the glenoid cavity F vertex of the temporal bone of the shape of socket which is the location of the original temporomandibular joint to the part

imitated anatomically and morphologically. Physical relationship with the conventional artificial temporomandibular joint B, Neurocranium Br, an eye socket Or, Maxilla Max, Mandible Man, an ear hole E and the normal temporomandibular joint NJ, an infratemporal fossa LF, the mandibular-ramus first transition RA, the mandibular-ramus trailing edge RP, the mandibular-ramus radial border RL, and a mandibular notch RN is shown.

[0019] As a result of making it in agreement with an original anatomical position and an original gestalt as shown in the artificial temporomandibular joint B at the time of the opening movement of drawing 8 , the temporomandibular joint will be positioned in the part distant from the motor center, and the amount of gliding motility of conventional hard material condyle Cc' will increase. Moreover, in order to carry out open size of the opening distance of the anterior-tooth section, conventional hard material condyle Cc' must glide to the method of Shitamae against the stress of the perimeter muscle adhering to a mandible. It is difficult to make it glide over conventional hard material condyle Cc' to the method of Shitamae with the opening distance approaching a limitation being expanded further. In order for hard material condyle Cc' to perform gliding motility, the opening distance ROM 2 in the anterior-tooth section at the time of shifting to gliding motility from rotation from the opening distance ROM 1 in the anterior-tooth section at the time of performing only rotation in the artificial temporomandibular joint B will become large. As a result of the conventional artificial temporomandibular joint's B making a normal temporomandibular-joint gestalt recover the gestalt of the temporomandibular joint, it is going to compensate a jaw movement only by the part of a glenoid cavity F, strong derangement ****, a superfluous load causes stress concentration, and slack and breakdown of Socket S tend to take place.

[0020] Drawing 9 thru/or drawing 11 express the mimetic diagram at the time of wearing for the artificial temporomandibular joint A as one example of this invention to the body, in drawing 9 , a sagittal plane view and drawing 10 show a coronal-plane view, and drawing 11 shows a horizontal plane view. Physical relationship with the artificial temporomandibular joint A of this invention, Neurocranium Br, an eye socket Or, Maxilla Max, Mandible Man, an ear hole E and the normal temporomandibular joint NJ, an infratemporal fossa LF, the mandibular-ramus first transition RA, the mandibular-ramus trailing edge RP, the mandibular-ramus radial border RL, and a mandibular notch RN is shown in drawing 9 thru/or drawing 11 . Moreover, the sagittal plane mimetic diagram of the artificial temporomandibular joint A of this invention at the time of opening is shown in drawing 12 . As drawing 9 thru/or drawing 12 show, from the location of the original temporomandibular joint OCH (left-hand side), the locations of the artificial temporomandibular joint are the front and a lower part, and are positioned in the joint upheaval (tuberculum articulare) AE lowest point of a convex temporal bone. Moreover, it is located in right above [of a mandibular notch RN] to Mandible Man.

[0021] As drawing 9 thru/or drawing 12 show, it is fixed to the joint upheaval AE section of a temporal bone with Screw Sc, and Socket (socket) S consists of the elasticity material socket section Fs and a socket-temporal bone joint Ts. Similarly it is fixed to the mandibular-ramus lateral surface RL of Mandible M with a screw, and Condyle C is divided into the condyle-mandible joint Cm and the hard material condyle section Cc. Although the flat surface which had the fixed include angle F to the plane of occlusion OP is given as shown in the sagittal plane view of drawing 9 , and the elasticity material socket section Fs made from ultra high molecular weight polyethylene contacts punctiform in the hard material condyle section Cc and the sagittal section of a cobalt-chromium alloy, the superfluous migration to back is prevented by Stopper Sp, and superfluous migration ahead is prevented by Stopper Sa. By the coronal-plane view of drawing 10 , and the horizontal plane view of drawing 11 , although the elasticity material socket section Fs contacts the hard material condyle section Cc, the elasticity material socket section Fs supports the free lateroduction of the hard material condyle section Cc, in order to slide in inside-and-outside side to the socket-temporal bone joint Ts. As for the socket-temporal bone joint Ts and the condyle-mandible joint Cm which hit a plane of composition with a bone, pure titanium and a titanium alloy are used.

[0022] As drawing 12 shows, in the time of opening, it exercises by the hard material condyle section Cc of the artificial temporomandibular joint A rolling with slipping in connection with a jaw movement, but since it approaches with a motor center, the hard material condyle section Cc of the artificial temporomandibular joint A of this invention has the specific gravity of rotation larger than gliding motility. Although the amount of rotation of the hard material condyle section Cc increases, gap with a motor center decreases and it is easy to compensate gliding motility with rotation.

[0023] In order to slide on the elasticity material socket section Fs side top which has the fixed include

angle F to a plane of occlusion Of in a sagittal section view, it is not necessary to glide over the hard material condyle section Cc of the artificial temporomandibular joint A of this invention to the method of Shitamae against the stress of the perimeter muscle which adheres to a mandible like the conventional artificial temporomandibular joint B as drawing 11 shows. artificial -- the temporomandibular joint -- A -- it can set -- rotation -- from -- gliding motility -- having shifted -- the time -- an anterior tooth -- the section -- opening -- distance -- ROM -- two -- ' -- rotation -- only -- having carried out -- the time -- an anterior tooth -- the section -- opening -- distance -- ROM -- one -- ' -- being small . Therefore, when it shifts to gliding motility, the opening distance of the anterior-tooth section decreases, it rolls and the shift to sliding motion from movement becomes smooth, and even if rotation reaches a critical mass, it has the structure where it can be easy to perform gliding motility.

[0024] Since the hard material condyle section Cc is designed to the sudden front and the sudden lateroduction so that the skid to the side of the elasticity material socket section Fs may be possible and deviation of the hard material condyle section Cc may also be possible, it can offer the stable contact and support of the elasticity material socket section Fs and the hard material condyle section Cc. Moreover, the static location of the movement terminal which is the occlusion of the tooth of a vertical jaw, and the artificial temporomandibular joint is designed by Stopper Sp so that there may be no gap. As compared with the conventional artificial temporomandibular joint B, an excessive load cannot be easily applied to the artificial temporomandibular joint A of this invention about the difficult chewing motion of reappearance, and since the include angle which pays ****** dynamically is large, it is hard to receive constraint in the direction of ****** from the above-mentioned point.

[0025] Drawing 13 thru/or drawing 15 are what showed the exploded view of Socket S, respectively, in drawing 13 , a sagittal plane view and drawing 14 show a coronal-plane view, and drawing 15 shows a horizontal plane view. Physical relationship can be grasped from the sagittal plane view of the direction shown in Front An and Back P, the upper part U, a lower part Lo, the inner direction M, the method L of outside, etc., and Socket S, a coronal-plane view, and a horizontal plane view. Similarly the physical relationship of the back stopper Sp, the front stopper Sa, and the screw Sc for immobilization for osteosynthesis is expressed to drawing 13 thru/or drawing 15 .

[0026] Drawing 16 thru/or drawing 18 show the exploded view of Condyle C, respectively. In drawing 16 , the exploded view of the condyle C of a sagittal plane view and drawing 17 show the exploded view of the condyle C of a coronal-plane view, and drawing 18 shows the exploded view of the condyle C of a horizontal plane view. Each physical relationship can be grasped like the exploded view of Socket S from Front An and Back P which show a direction, the upper part U, a lower part Lo, the inner direction M, the sagittal plane view (drawing 16) of the method L of outside, and Condyle C, a coronal-plane view (drawing 17), and a horizontal plane view (drawing 18).

[0027] The artificial temporomandibular joint A of this invention is the interface of the socket-temporal bone joint Ts and the condyle-mandible joint Cm which hit a plane of composition with a bone the front and since it is located caudad, and the existing bone compared with the location of the original temporomandibular joint, and the quality of sufficient bone touch area for immobilization or bone trabeculae is easy to be obtained. Furthermore, since the location of the artificial temporomandibular-joint system A has distance with the dangerous neurocranium unlike the conventional artificial temporomandibular joint B, it is not necessary to apprehend the subsidence to the basis cranii. As drawing 9 thru/or drawing 11 show, since it is fixable to the mandibular-ramus first transition RA, the mandibular-ramus radial border RL, and a mandibular notch RN by the third page, the condyle-mandible joint Cm can fix the hard material condyle section Cc to Mandible Man firmly easily. Moreover, the socket-temporal bone joint Ts is also firmly fixable to the thick bone trabeculae of the joint upheaval AE of a temporal bone.

[0028] Drawing 19 </A> expresses the mimetic diagram at the time of wearing for condyle C' for trailing edges designed so that it might fix to a mandibular-ramus trailing edge in the artificial temporomandibular joint A of this invention to the body. Condyle-mandible joint Cm' for trailing edges is fixed to the mandibular-ramus trailing edge RP, the mandibular-ramus radial border RL, and a mandibular notch RN by the third page. Drawing 20 thru/or drawing 22 show the exploded view of condyle C' for trailing edges, respectively. In drawing 20 , the exploded view of condyle C' for trailing edges of a sagittal plane view and drawing 21 show the exploded view of condyle C' for trailing edges of a coronal-plane view, and drawing 22 shows the exploded view of condyle C' for trailing edges of a horizontal plane view.

[0029] Unlike drawing 9 thru/or drawing 12 , and drawing 19 , drawing 23 shows the artificial

temporomandibular joint D which equipped the mandibular-ramus radial border RL with Socket S, and equipped a glenoid cavity F and the joint upheaval AE with Condyle C. Moreover, the mimetic diagram at the time of the opening is shown in drawing 24 . The artificial temporomandibular joint A of this invention also assumes equipping with Socket S and Condyle C conversely like the artificial temporomandibular joint D shown in drawing 23 thru/or drawing 24 , and can equip with the artificial temporomandibular joint which suited each patient.

[0030] Although the material of the condyle-mandible joint which is a joint with a bone, and a socket-temporal bone joint was indicated as titanium in the example by using the material of the hard material condyle section Cc as a cobalt-chromium alloy, having used the material of the elasticity material socket section Fs as the product made from ultra high molecular weight polyethylene, other well-known metals and resin are producible into an ingredient in this invention.

[Effect of the Invention] As explained above, the time, the specific gravity of the gliding motility which prevents bias of a mandible, and holds the gestalt of the bottom face, and can be hard to reproduce at the time of dynamic and a function is decreased at the time of static and un-functioning, and the artificial temporomandibular joint concerning this invention can compensate gliding motility in rotation. Structurally, even if the amount of rotation in a sagittal plane approaches a limitation, shift of rotation and gliding motility is smooth, without the condyle's not gliding to the method of Shitamae against the force of perimeter muscles, and the amount of gliding motility being proportional to opening distance. Moreover, in biomechanics, the contact condition of a functional side is line contact by point contact and the forehead cross-section view in a sagittal section view, and it is hard to receive constraint in the direction of ****** in the facies articularis in a sagittal plane. The lateroduction of the condyle with reappearance difficult for coincidence is permissible. Furthermore, the part which fixes the condyle and a socket was large, and immobilization was firm and became easy [actuation]. For this reason, it does not need to be anxious in slack or wear of **** of limitation of movement, or the artificial temporomandibular joint, the subsidence to the neurocranium, etc. This invention which measures improvement in a function, without setting the location of a joint as a different part from the former like this invention, and performing gestalt-imitation can be called epoch-making thing from which the way of thinking with the conventional well-known artificial temporomandibular joint differs.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] Assembly drawing from the method view of the outside of a sagittal plane of the artificial temporomandibular joint A of this invention
[Drawing 2] Assembly drawing from the coronal-plane front view of the artificial temporomandibular joint A of this invention
[Drawing 3] Assembly drawing from the horizontal plane upper part view of the artificial temporomandibular joint A of this invention
[Drawing 4] Assembly drawing from the horizontal plane lower part view of the artificial temporomandibular joint A of this invention
[Drawing 5] The sagittal plane mimetic diagram of the conventional artificial temporomandibular joint B
[Drawing 6] The coronal-plane mimetic diagram of the conventional artificial temporomandibular joint B
[Drawing 7] The horizontal plane mimetic diagram of the conventional artificial temporomandibular joint B
[Drawing 8] The sagittal plane mimetic diagram of the artificial temporomandibular joint B at the time of the conventional opening
[Drawing 9] The sagittal plane mimetic diagram of the artificial temporomandibular joint A of this invention
[Drawing 10] The coronal-plane mimetic diagram of the artificial temporomandibular joint A of this invention
[Drawing 11] The horizontal plane mimetic diagram of the artificial temporomandibular joint A of this invention
[Drawing 12] The sagittal plane mimetic diagram of the artificial temporomandibular joint A of this invention at the time of opening
[Drawing 13] The mimetic diagram from the method view of the outside of a sagittal plane of Socket S
[Drawing 14] The mimetic diagram from the coronal-plane front view of Socket S
[Drawing 15] The mimetic diagram from the horizontal plane lower part view of Socket S
[Drawing 16] The mimetic diagram from the method view of the outside of a sagittal plane of Condyle C
[Drawing 17] The mimetic diagram from the coronal-plane front view of Condyle C
[Drawing 18] The mimetic diagram from the horizontal plane lower part view of Condyle C
[Drawing 19] Artificial temporomandibular joint A of the sagittal plane mimetic diagram which fixed condyle C' for trailing edges at the time of embarrassment
[Drawing 20] The mimetic diagram from the method view of the outside of a sagittal plane of condyle C' for trailing edges
[Drawing 21] The mimetic diagram from the coronal-plane front view of condyle C' for trailing edges
[Drawing 22] The mimetic diagram from the horizontal plane lower part view of condyle C' for trailing edges

[Drawing 23] Artificial temporomandibular joint D of the sagittal plane mimetic diagram which fixed conversely Condyle C and Socket S at the time of embarrassment
[Drawing 24] Artificial temporomandibular joint D of the sagittal plane mimetic diagram which fixed conversely Condyle C and Socket S at the time of opening
[Description of Notations]
A Artificial temporomandibular joint of this invention
B The conventional artificial temporomandibular joint

D What equipped with the socket and the condyle of the artificial temporomandibular joint of this invention conversely
NJ Normal temporomandibular joint
OCH The conventional temporomandibular joint
An Front
P Back
Lo Lower part
U Upper part
L The method of outside
M Inner direction
Right Right-hand side
Left Left-hand side
F Glenoid cavity
AE Joint upheaval (tuberculum articulare)
Br Neurocranium
Or Eye socket
Max Maxilla
Man Mandible
E Ear hole
LF Infratemporal fossa
RA Mandibular-ramus first transition
RP Mandibular-ramus trailing edge
RL Mandibular-ramus radial border
RN Mandibular notch
S Socket (socket)
C Condyle
C' The condyle for trailing edges
Fs Elasticity material socket section
Ts Socket-temporal bone joint
Cm Condyle-mandible joint
Cc Hard material condyle section
Cc' The hard material condyle section for trailing edges
Cm' Condyle-mandible joint for trailing edges
OP Plane of occlusion
Sp Back stopper
Sa Front stopper
Sc Screw for immobilization
Tg Temporal bone guide
Ls Temporal bone stopper
F The fixed include angle of an elasticity material socket and a plane of occlusion
ROM1 Opening distance in the anterior-tooth section at the time of performing only rotation in the conventional artificial temporomandibular joint B
ROM2 Opening distance in the anterior-tooth section at the time of shifting to gliding motility from rotation in the conventional artificial temporomandibular joint B
ROM1' Opening distance in the anterior-tooth section at the time of performing only rotation in the artificial temporomandibular joint A and D of this invention
ROM2' Opening distance in the anterior-tooth section at the time of shifting to gliding motility from rotation in the artificial temporomandibular joint A and D of this invention

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[Translation done.]

* NOTICES *

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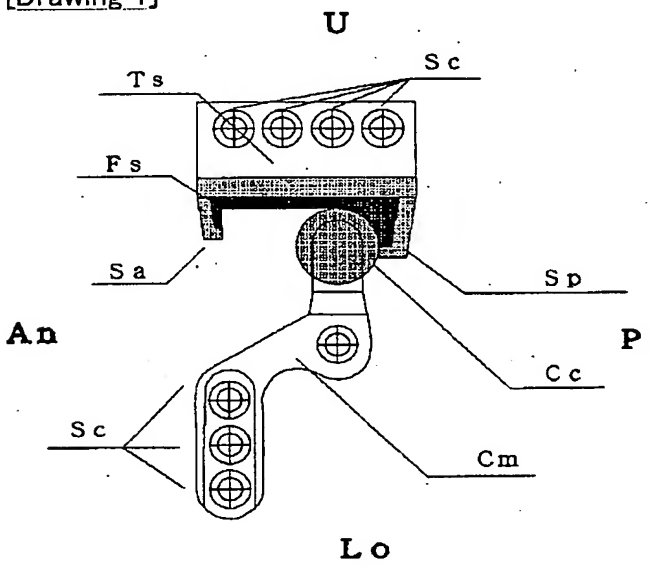
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

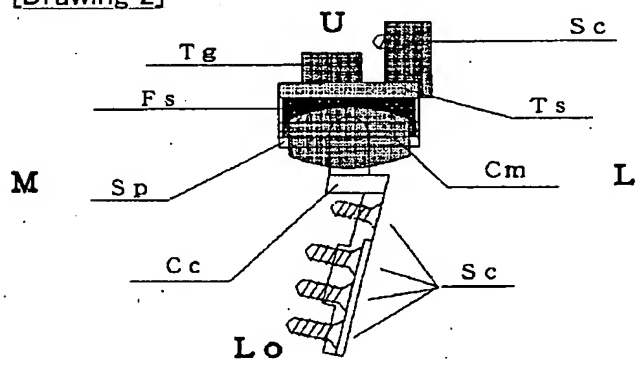
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

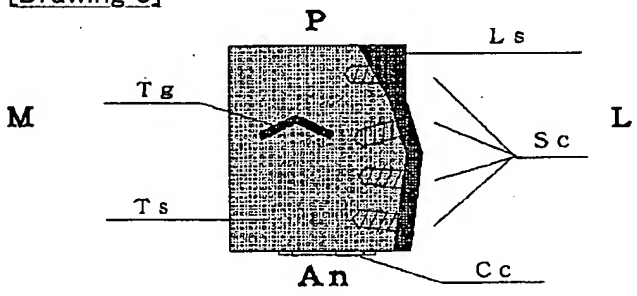
[Drawing 1]



[Drawing 2]



[Drawing 3]



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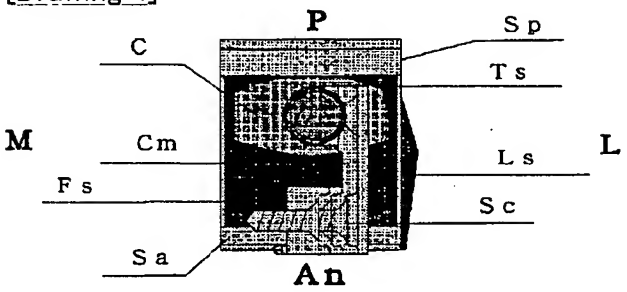

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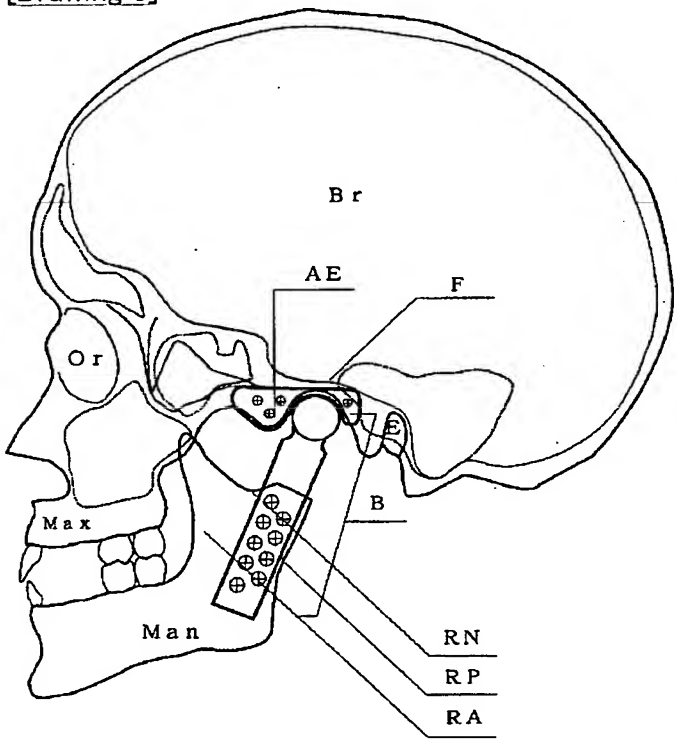

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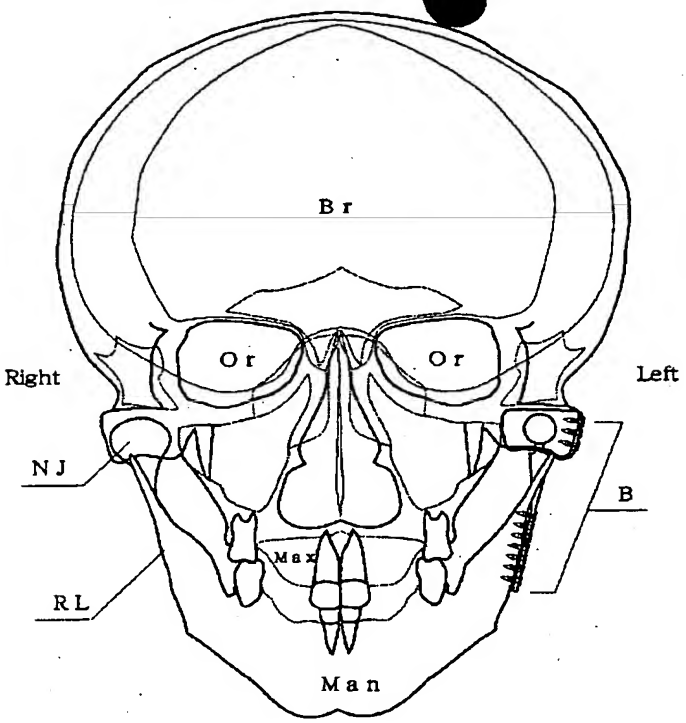
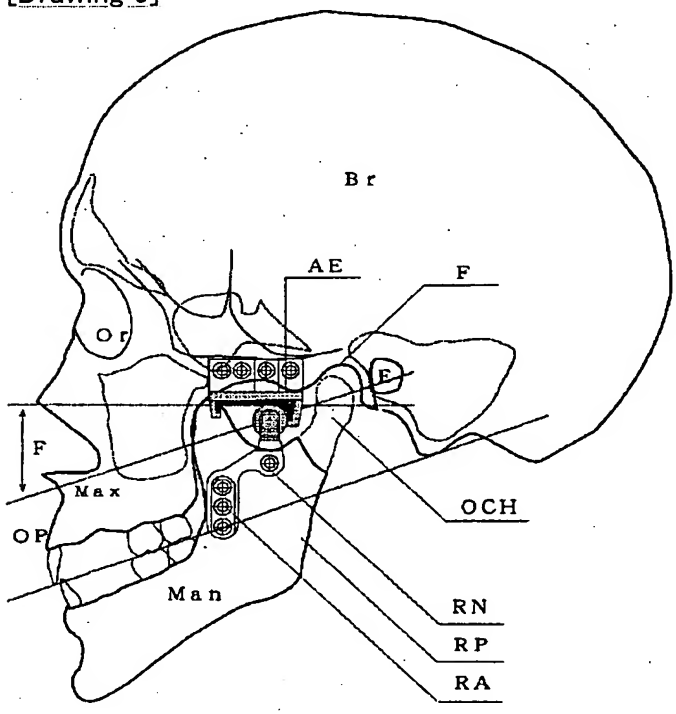


[Drawing 9]



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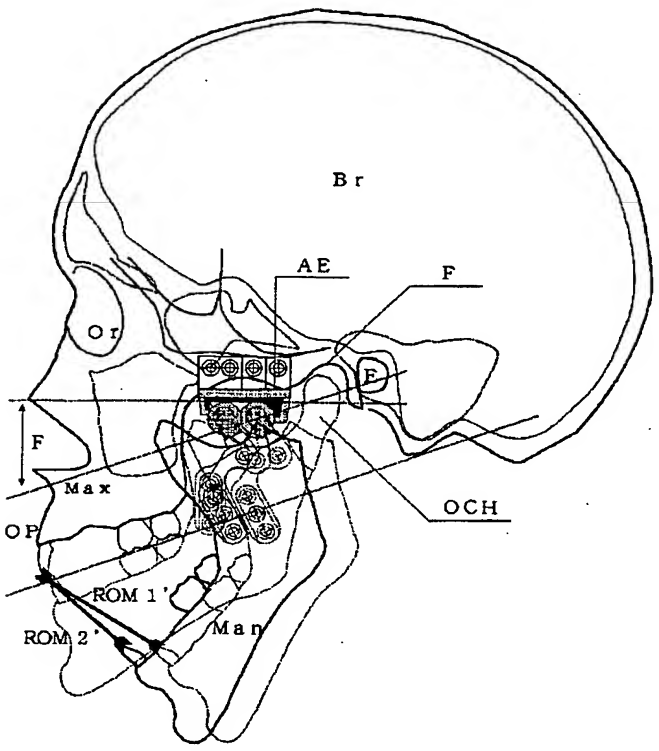

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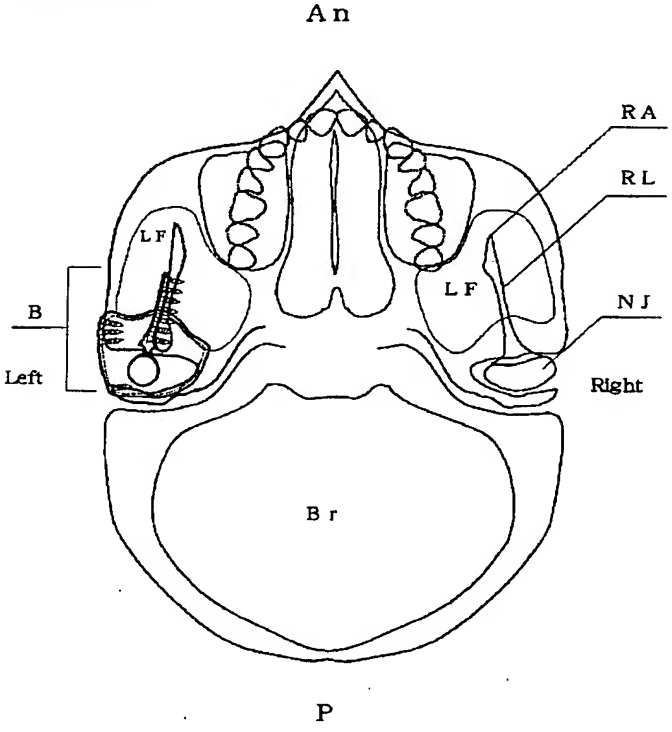

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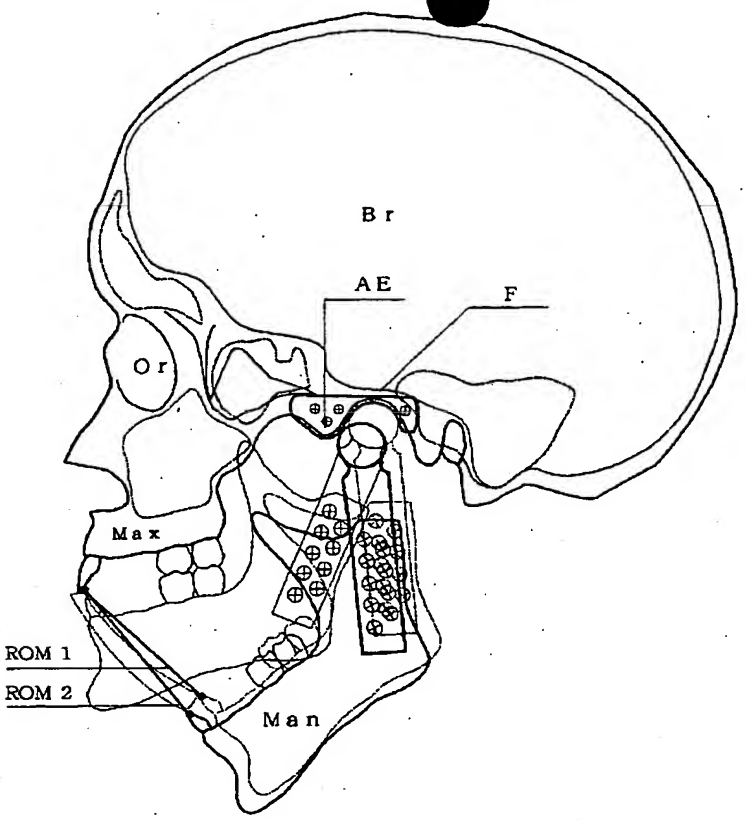
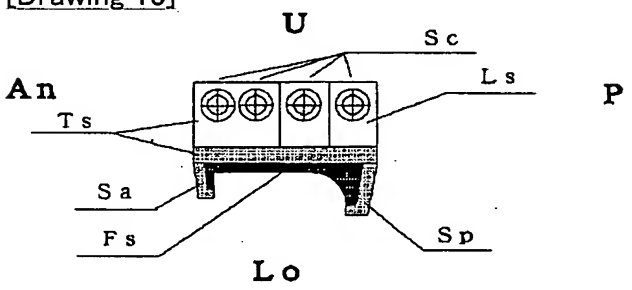


[Drawing 13]



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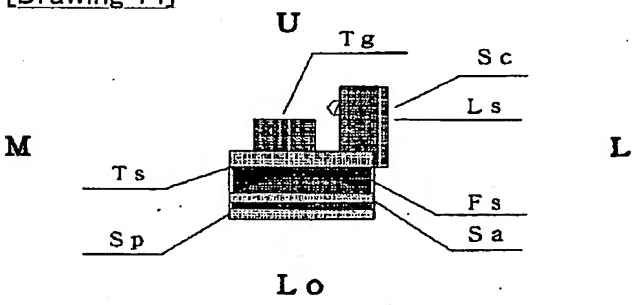

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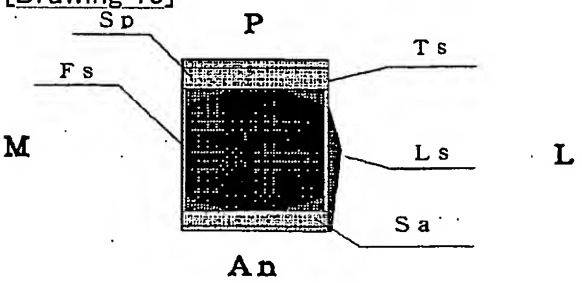

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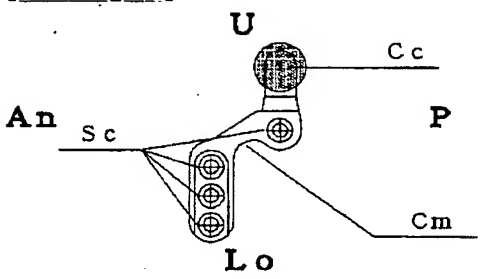
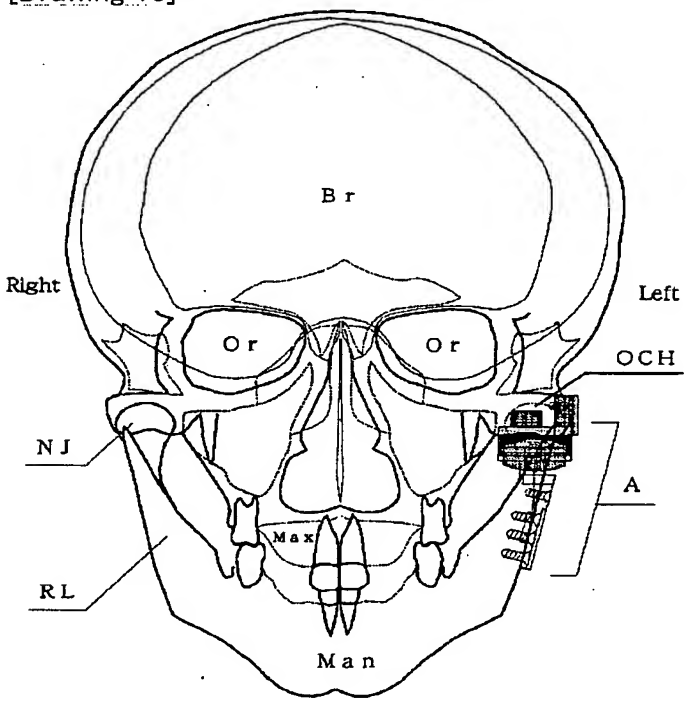


[Drawing 10]



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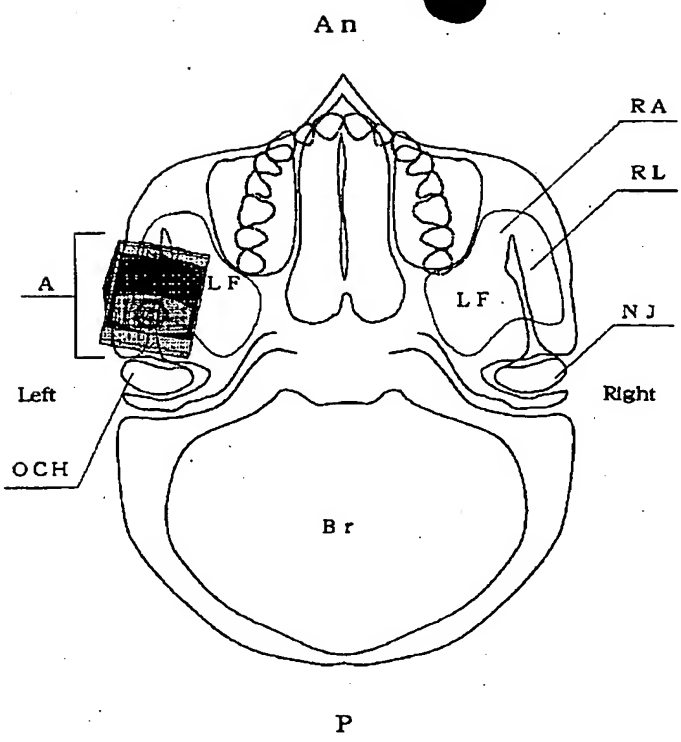

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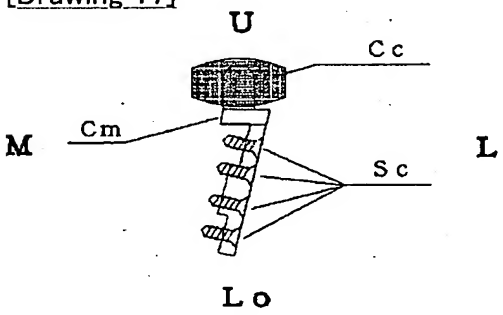

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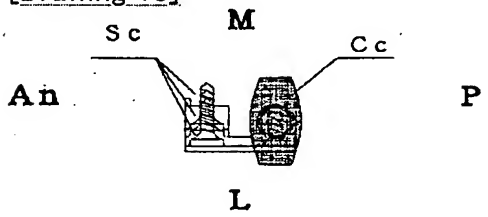
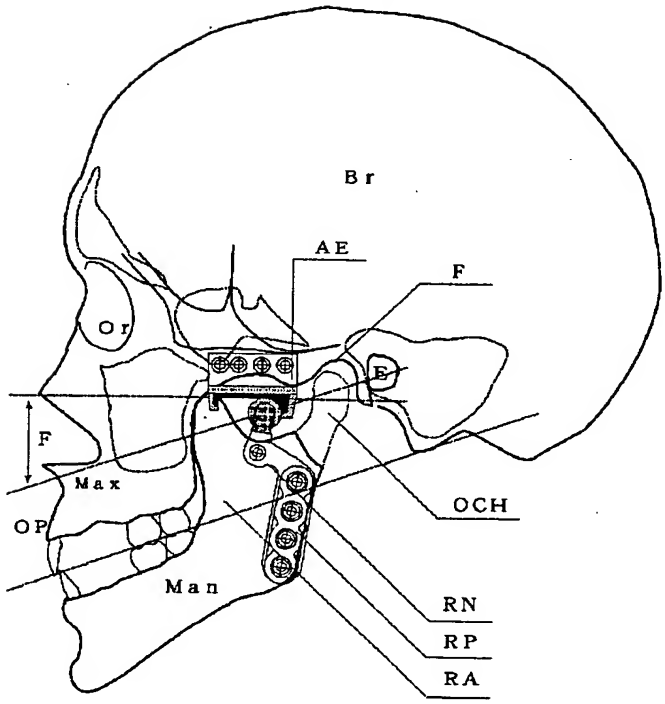
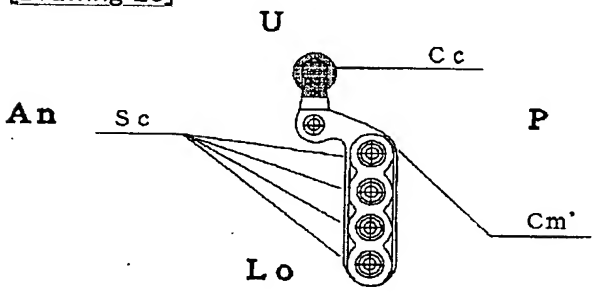


[Drawing 19]



[Drawing 20]



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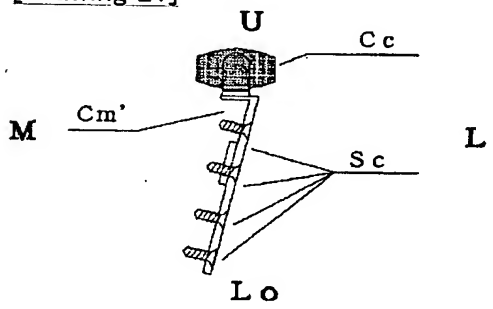

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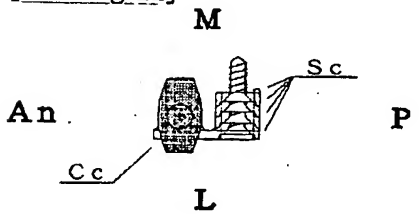

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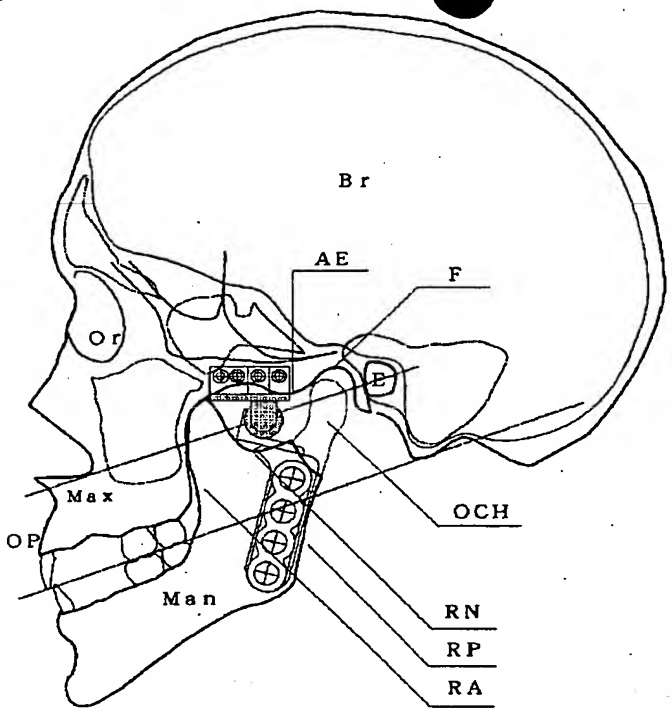

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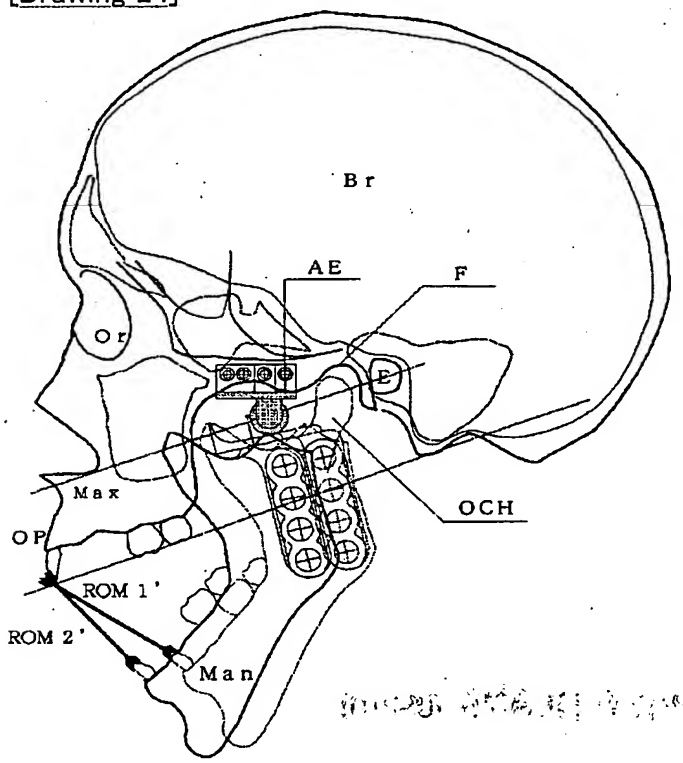

[Translation done.]